

2. Directs one or more specialized environmental engineering programs, or assists in the administration of a broad program for environmental sanitation and health.

3. Directs a small section of engineering specialists of the Engineer V level, in advanced and complex planning, development, research, design and/or investigative activities.

4. Serves as staff specialist in the area of project management by scheduling, monitoring, controlling and expediting major and complex engineering projects.

Knowledges and Abilities Required:

In addition to the knowledge and abilities required at lower levels, this level requires: A well-grounded and versatile background knowledge of engineering theory and precedent application both in general and in the area of specialization; a comprehensive knowledge of pertinent laws, policies, regulations and procedures; familiarity with other branches of engineering as they affect and relate to the area of specialization; extensive knowledge of the latest technological advances in the specialization and knowledge of administrative and supervisory principles and techniques.

The ability to function as a specialist and provide expert technical information and advice concerning the area of specialization; interpret, organize, execute, and coordinate assignments which are typically unique and complex, and to apply and adapt broad technical knowledge to the independent solution of unprecedented problems having a direct impact on extensive and important engineering programs; represent the organization in high-level conferences and meetings and serve as an authority in the area of specialization; function as the technical and administrative head of an organizational segment, and plan, implement and review the work of others; provide technical assistance in overcoming problems which cannot be solved by application of conventional theory, and evaluate the significance and applicability of technical results obtained.

ENGINEER VII

7.007

Duties Summary:

Provides administrative and technical direction over all activities of a major engineering division, branch or district office; and performs other duties as required.

Distinguishing Characteristics:

A position in this class works under general administrative direction with regard to policy matters and to insure appropriate coordination with other related program areas, but exercises broad authority for unreviewed action and decision with respect to technical aspects of work under his control, and for the planning and administration of the program in his assigned area of responsibility. In some functional areas this may be the top-level administrator, the distinction between this and the next-higher level depending on the size, scope and complexity of the program administered.

An engineer at this level typically exercises technical and administrative control, through Engineer VI supervisory heads or other key assistants, over

major engineering programs involving large monetary expenditures, or he may direct several small groups of engineers engaged in extremely complex projects typical of the engineer V and VI levels. The work directed is characterized by unique and complex problems, and a departure from accepted standards or guides; consequently, an engineer at this level is guided essentially by general overall directives, his own analysis and interpretation of broad policies and regulations of higher authority, his knowledge of technological advances, and a broad technical background and experience in an area or areas of specialization. An engineer at this level is responsible for developing and establishing guidelines for others to follow.

A high degree of originality and judgment is required at this level in the direction of major programs and projects characterized by the presence of unique and extremely complex problems having no precedents.

The scope of the program area directed and the effect of the high-level decisions made by an incumbent of this class necessitate extensive contacts with other top engineering and administrative executives, leading scientific personnel, and technical experts. These contacts are both internal and external, and are frequently made in conferences held to exchange technical information and negotiate mutually satisfactory solutions to important issues.

Examples of Assignments:

The following administrative duties are characteristic of all positions in this class irrespective of the area of specialization: Directs and administers, through subordinate supervisors, extensive engineering activities in which several major projects are generally being performed concurrently; organizes the broader phases of work, such as establishing internal policies and procedures and determining priorities; participates in conferences and meetings with key management and technical officials to discuss and reach agreement on important technical proposals, provide consultative assistance on engineering problems, and coordinate work efforts; holds periodic meetings with subordinate supervisors to keep them informed on current and future projects and policy and procedural matters, render decisions on problem situations, and review engineering work submitted; anticipates the need for and initiates recommendations for long-range projects; develops and defends budgetary requirements; serves as the technical expert on committees considering important engineering matters; directs program planning and evaluation activities; recommends changes in organizational and functional structure and staffing, to assure maximum efficiency in the use of allotted funds, manpower and equipment; prepares and directs the preparation of technical and administrative reports and correspondence.

Knowledges and Abilities Required:

In addition to the knowledge and abilities required at lower levels, this level requires: A broad background of scientific and technical engineering knowledge; broad knowledge of pertinent laws, policies, regulations, procedures, and overall plans and objectives; extensive knowledge of relationship of other branches of engineering with own program area, and of latest technological advances; knowledge of the principles and practices of administration.

The ability to correlate an extensive technical background of experience in engineering theories and practices with an expert knowledge of policy and procedural considerations; plan and carry out important work for which few tangible guides are available; develop and establish guidelines for others to follow;

recognize and pursue critical developments, and analyze and interpret the theoretical significance and potential application of experimentation and research; participate in high-level conferences and discussions with other specialists and executives to plan programs, policies and standards, and reach agreement on major issues; manage effectively a staff concerned with major programs and projects; adjust programs to meet varying conditions; evaluate work progress, and visualize future program needs; deal effectively with committees and representatives of community groups, other governmental agencies and industry, and address meetings of public or other groups.

ENGINEER VIII

7.008

Duties Summary:

Directs all activities of a major engineering division with full administrative responsibility for extensive and complex engineering programs; and performs other duties as required.

Distinguishing Characteristics:

This is the top-level class in the professional engineering series. A position in this class typically directs large, complex and diverse engineering programs on a state-wide basis, involving top echelon coordination, consultation, review and technical functions. Such programs are more extensive and complex in scope than those at the next lower level. An engineer at this level is under very general administrative direction only, since he is recognized as the top technical authority in the program area administered. Supervisory control is consultive only, and is limited to evaluation of the fulfillment of broad objectives. Within a general framework of legal requirements and agency policy, an engineer at this level is permitted a free and flexible approach to new methods and techniques in accomplishing his executive role. Guides for major activities are often lacking, and the incumbent initiates and establishes procedures and regulations, and makes decisions which become the guides to be followed by others. An incumbent of this class has high-level contacts with other key officials in the State and with top engineering, scientific and administrative personnel in other governmental agencies, educational institutions, and industry in order to plan and coordinate the broad engineering programs characteristic of this level, and to make decisions that will permit their effective accomplishment. Decisions and commitments are binding, and have a far-reaching effect, in view of the broad scope and major significance of the engineering programs administered. Recommendations are considered as authoritative and are not reviewed for technical adequacy.

Examples of Assignments:

The following administrative duties are characteristic of all positions in this class irrespective of the area of specialization: Plans, organizes, directs and coordinates, through subordinate administrative personnel, state-wide engineering programs in a major engineering division. Organizes the broader phases of programs, such as establishing policies and general objectives and determining priorities; participates in conferences with top-echelon government, management and technical officials to discuss and reach agreement on important technical proposals. Serves as the top technical consultant or ranking authority in the program area administered, and has authority to represent the agency and speak

for it on current and proposed programs at top-echelon conferences. Reviews and makes recommendations on proposed legislation; conducts staff meetings with subordinate administrative and supervisory personnel to discuss current and future projects, and changes affecting the policies, procedures and goals of the department as they relate to the work of the division; develops and defends budgetary requirements and determines organizational and staffing requirements for the division; evaluates the practicability and promise of new ideas, plans and developments, and reviews administrative decisions of subordinates for attainment of overall objectives; provides advice or direction as needed on policy, administrative or technical matters; prepares and directs the preparation of correspondence, and technical and administrative reports.

Knowledges and Abilities Required:

In addition to the knowledges and abilities required at lower levels, an incumbent of this class must have a thorough knowledge of the policies and long-range objectives of the department and agency; knowledge of technological advances in the program area and of developments in allied fields. Demonstrated ability to correlate the above knowledge with own broad experience to effectively plan and coordinate a large and complex state-wide engineering program; evaluate trends in scientific fields as they affect program objectives; make top-level decisions on courses of action having far-reaching implications; function as a top-echelon technical consultant and provide advice on difficult and important engineering matters; represent the agency at top-echelon conferences and discussions involving leaders of government, industry, educational institutions, and the public; act with authority on current and proposed programs, and maintain cooperative relationships; direct and administer programs of the scope indicated.

PART II

DEPARTMENT OF PERSONNEL SERVICES
STATE OF HAWAII

7.001 7.005
7.002 7.006
7.003 7.007
7.004 7.008



Minimum Qualification Specification
for the Classes:

ENGINEER I
ENGINEER II
ENGINEER III
ENGINEER IV
ENGINEER V
ENGINEER VI
ENGINEER VII
ENGINEER VIII

Education Requirement:

All applicants must meet one of the requirements specified in A, B, or C below:

A. Graduation from a school of engineering in an accredited college or university.

Note: For some positions, graduation from an accredited college or university with a degree in physics, mathematics, or chemistry may be accepted as qualifying, provided the applicant has had at least 15 credits in engineering sciences, common to all engineering disciplines; e.g., thermodynamics, statics, electrical science, applied mechanics, engineering drawing, strength of materials, etc.

B. Administrative, professional or technical experience involving the application and knowledge of the fundamental physical and mathematical sciences underlying professional engineering including physics, chemistry, mathematics through integral calculus, and engineering sciences such as statics, dynamics, strength of material, thermodynamics, fluid mechanics and engineering drawing and other specialized courses to one of the branches of engineering. Such experience must be substantially equivalent to the knowledge and understanding gained by completion of a college training leading to a bachelor's degree in engineering; or

C. A combination of college training in engineering and experience mentioned in B above substantively equivalent to completion of a college training leading to a bachelor's degree in engineering.

Experience Requirements:

Except for the substitutions provided for in this specification, applicants must have had progressively responsible experience of the kind and quality described below, and in the amounts shown in the following table:

1/29/69- Hawaii
Maui
Kauai

Haimano
State Hosp.
Ed. Environ. Hlth. (P)

Class Title		Engineering Experience	Supervisory or Staff Advisory Experience	Administrative Experience	Total Experience
Engineer	I	0	0	0	0
Engineer	II	1	0	0	1
✓ Engineer	III	2 - 1 1/2 years	0	0	2
Engineer	IV	3* - 2 1/2 years	0	0	3
Engineer	V	4* - 3 1/2 years	**	0	4
Engineer	VI	4* - 3 1/2 years	1	***	5
Engineer	VII	4+	1	1	6
Engineer	VIII	4+	1	2	7

Engineering Experience: Progressively responsible professional engineering which required the knowledge and application of the basic physical and mathematical sciences and the engineering sciences to the solution of theoretical or practical engineering problems.

Examples of qualifying professional engineering experience are as follows:

A. The development and design of machines, equipment, structures, or power, water, communication, or transportation systems and facilities, or the preparation of development, design, or construction specifications for such materials or systems, involving the use of theoretical and applied mechanics, a knowledge of the properties of materials and other appropriate engineering and scientific knowledges and skills.

B. Original research in one or more branches of engineering, developing engineering applications of physical and other scientific principles.

C. Administration of engineering programs and projects, involving analysis of requirements for equipment and materials, study of technical feasibility and cost, selection of approach, and direction of problem solution.

D. Interpretation of systems operational requirements in terms of physical facilities, and the design and development of standard procedures for efficient operational use or maintenance of such facilities.

E. Evaluation, investigation, or survey of engineering projects, structures, devices, or services.

F. Such activities as production, construction, regulation, and test, when they involve engineering considerations and decisions as important and controlling elements.

Note: In some situations, experience which is not of itself clearly professional engineering experience may be accepted in lieu of "professional" engineering experience. In such cases, the experience must have been preceded by prior "professional" engineering experience and must contribute directly and significantly to the candidate's professional engineering competence. For example, an engineer may be assigned to a management or a computer systems analysis position in preparation for assumption of higher level responsibilities in engineering administration.

Quality of Experience:

+ ✓ (*)For the Engineer IV, V, and VI levels, at least one year of the required engineering experience must have been experience comparable to the next lower level.

(+)For the Engineer VII and VIII levels, applicants must have had either one year of experience comparable to the level immediately below the one for which they have applied, or two years of experience comparable to the second level.

✓ In any case, the required amount of experience for any level will not in itself be accepted as proof of qualification. The applicant's record of experience and education must show that he has the ability to perform efficiently the duties of the position.

Supervisory or Staff Advisory Experience:

✓ A. Supervisory Experience: Professional engineering experience which included training subordinates, coordinating and assigning workloads, evaluating performance, assisting in difficult and problem areas, and maintaining high standards of work and timely accomplishment of work objectives.

✓ (**)For the Engineer V level, supervisory potential rather than actual supervisory experience may be accepted. Supervisory potential or the ability to perform supervisory duties will be considered to have been met when there is strong evidence of the necessary supervisory aptitudes as demonstrated by outstanding performance on special assignments of understudy supervisory activities, self-development programs such as further education or training in supervision, or affirmative appraisals by supervisors as to leadership qualities; and/or

B. Staff Advisory Experience: Professional engineering experience as technical expert in a specialized area or program function performing staff advisory, consultative and/or reviewing the work of a staff of specialist assigned to such activities as long-range planning, research and/or development of specific projects, programs, etc.

Administrative Experience:

Professional engineering experience which included the planning (including budget planning and justification), organizing, staffing, policy formulation and implementation of same, and directing, a program providing staff services and/or assistance.

X (***)For the Engineer VI level, administrative aptitude rather than actual administrative experience may be accepted. This requirement will be considered to have been met when there is strong affirmative evidence of the necessary administrative abilities. Such evidence may be in the form of success in regular or special assignments or projects which involved administrative problems; interest in management demonstrated by the performance of work assignments in a manner which clearly indicates awareness of managerial problems and the ability to solve them; completion of educational or training courses in the area of management accompanied by the application of the principles, which were learned, to work assignments; management's observation and evaluation of the applicant's leadership and managerial capabilities; success in trial assignments to managerial and/or administrative tasks.

Substitutions Allowed:

Substitution of a Master's degree in Engineering for Engineering Experience:

✓ A master's degree in a pertinent engineering field from a school of engineering in an accredited college or university may be substituted for one (1) year of engineering experience.

✓ Substitution of Supervisory, Staff Advisory Experience or Administrative Experience for Engineering Experience: Excess Supervisory, Staff Advisory or Administrative experience of the type and quality described above may be substituted for Engineering experience on a year-for-year basis.

✓ Substitution of Administrative Experience for Supervisory, Staff Advisory Experience: Excess Administrative experience of the type and quality described above may be substituted for Supervisory or Staff Advisory experience on a year-for-year basis.

Licenses Required:

Professional License Requirement: For the Engineer IV and higher levels, applicant must possess a Hawaii State certificate of registration as a professional engineer.

✓ Driver's License: For some positions, applicants may be required to have a valid Hawaii State driver's license.

Tests:

An applicant who qualifies through Education Requirement option B or C will be required to take and pass a written test designed to measure the applicant's knowledge of the fundamental physical and mathematical sciences underlying professional engineering and his understanding of the engineering sciences and techniques and their application to engineering problems.

Note: Applicants who have qualified on the Engineer-In-Training (EIT) examination administered by the Professional and Vocational Licensing Board of the Department of Regulatory Agencies will not be required to take the written test mentioned in the above paragraph.

Applicants for the supervisory levels must qualify on the Supervisory Judgment Test. Applicants for the administrative levels must qualify on the Administrative Judgment Test. These tests, however, may be waived for non-competitive actions if the incumbent had previously qualified on these tests.

Selective Certification:

Some engineer positions may require the background and thorough knowledge of a particular engineering discipline; e.g., environmental, electrical, etc. For such positions, certification may be restricted to eligibles who possess the pertinent experience and training required to perform the duties of the position.

Agencies requesting selective certification must substantiate their reasons(s) for requesting same.

Physical Requirements:

Standard 3 g. Applicants must be physically able to perform efficiently the duties of the position, which are described elsewhere in this specification. Good vision in one eye and ability to read without strain printed material the size of typewritten characters are required, glasses permitted. Ability to hear the conversational voice, with or without a hearing aid, is required. In most instances, an amputation of an arm, hand, leg or foot will not disqualify an applicant for appointment, although it may be necessary that this condition be compensated by use of satisfactory prosthesis. Any physical condition which would cause the applicant to be a hazard to himself or to others will disqualify him for appointment. In addition, applicants must possess emotional and mental stability.

APPROVED: December 27, 1968

Soretha Tukuda
for (Mrs.) EDNA TAVARES TAUFASAU
Director of Personnel Services

PART I

DEPARTMENT OF PERSONNEL SERVICES
STATE OF HAWAII



Class Specification
for the

MICROBIOLOGIST SERIES

This series includes all classes of positions the duties of which are to administer, supervise or perform scientific, and professional work in the detection, isolation, identification, cultivation, use and control of microorganisms. |

Microbiologists work in a laboratory setting involving three basic areas of activity: (1) public health or veterinary medicine; (2) regulation and control; and (3) research.

Public health and veterinary medicine activities involve conducting various tests for the diagnosis and control of diseases caused by pathogenic microorganisms which are communicable to man and to animals. This includes the isolation and identification of microorganisms from tissues, body fluids, excreta or lesions; the determinations of serological and immunological reactions and the determination of antibiotic sensitivities.

Regulatory and control activities involve the testing of such items as water, food, and dairy products, antibiotics, antitoxins, etc., to see that they conform to legal standards, such as those established for purity, potency, and safety. It may also be concerned with the establishment of such standards and with the inspection of production facilities producing biologicals for conformance with approved methods and procedures.

Research involves work in the interest of extending the body of knowledge in the field of microbiology. Work of this nature and scope is normally assigned at supervisory and administrative levels.

Microbiologists also provide training to students of microbiology or other related fields and consultation services to various federal, state, and county as well as private agencies.

Microbiologist classes are defined in terms of the nature and scope of responsibilities and the complexity of duties assigned. These are described in relation to the factors of nature and variety or scope of work; supervision received; supervision exercised; originality required; nature and scope of recommendations, decisions, commitments and conclusions; and knowledges and abilities required to perform the work. Each factor is not necessarily significant or pertinent in each class level, or they may be combined in the class specifications to improve the conveying of meaning or for the sake of brevity.

Department may use descriptive titles placed in parenthesis following the main title. Example: Microbiologist VII (Public Health Laboratory Director)

(This series replaces the following classes)

Microbiologist I	5.515
Microbiologist II	5.520
Microbiologist III	5.525
Microbiologist IV	5.530
Microbiologist V	5.535

✓ Virologist 5.565
✓ Public Health Laboratory Director 5.635

APPROVED: April 24, 1967

Edna Tavares Taupansau
(Mrs.) EDNA TAVARES TAUPANSAU
Director of Personnel Services

MICROBIOLOGIST II

5.510

Duties Summary:

Performs a variety of assignments in the field of microbiology; and performs other duties as required.

Distinguishing Characteristics:

This class involves the performance of a wide range of laboratory work in accordance with standard techniques and well-defined procedures and policies, under the supervision of a higher level microbiologist. Initially, assignments are geared to provide experience and training in the application of basic professional knowledges, abilities and in the use of scientific methods, procedures and techniques. Review of work is spot-checked during progress and results are not checked in detail except when reported observations are inconclusive or deviate from those normally expected in a given situation. As employee gains competence, assignments become increasingly general and supervision received is relaxed to the extent normally accorded a journeyman microbiologist.

Typical Duties:

Performs bacteriological, serological, parasitological, mycological, immunological, biochemical and other microbiological work; makes diagnostic examinations of fecal specimens, urine, blood, spinal fluid, serum, pus, lesion swabs, throat swabs, respiratory secretions, exudates, transudates, and other body fluids of human and/or animal origin for diseases such as tuberculosis, pneumonia, undulant fever, meningitis, diphtheria, gonorrhea, septicemia, typhoid fever, food poisoning, amoebic dysentery, bacillary dysentery; streptococcal and staphylococcal infections; identifies hookworms, tapeworms, and other types of microparasites; makes serologic examination of blood serum and spinal fluid for evidence of syphilis; makes heterophile and febrile agglutination tests for infectious mononucleosis, undulant typhoid and paratyphoid fevers and tularemia; makes microbiological examinations for the sanitary control of potable water for domestic use; makes microbiological examinations for the sanitary control of beach and swimming pool water for recreational use; makes microbiological examinations of eating, drinking, and food servicing equipment for the sanitary control of public eating places; makes microbiological tests on foods for the presence of food poisoning organisms; makes microbiological examinations of milk, dairy and food products; makes microbiological examinations of sewage and waste products; keeps records, compiles data, and submits reports.

Knowledges and Abilities Required:

Knowledge of: Basic principles and practices of microbiology; fundamental principles of chemistry, physics and related mathematics.

3/28/67

Ability to: Use and care for laboratory equipment and apparatus; apply standard procedures and techniques used in laboratories; perform tests accurately and make tentative conclusions; prepare clear and concise reports of laboratory findings; understand and carry out oral and written instructions.

MICROBIOLOGIST III

5.514

Duties Summary:

Performs the full range of assignments in one or more areas in the field of microbiology; may supervise assistants; and performs other duties as required.

Distinguishing Characteristics:

This class involves the independent performance of the full range of microbiological work in one or more areas including considerable technical responsibility for the particular area or areas assigned. Work is performed within a framework of established policies and procedures, but judgment is regularly required in the selection of methods, procedures and techniques and the evaluation of results. Work is performed under the general supervision of a higher level microbiologist who reviews all completed work for technical accuracy and logical evaluation of results. Position at this level may also be assigned to research and investigational programs carrying out given portions of the overall program under the guidance of a microbiologist responsible for the program.

Typical Duties:

Independently performs bacteriological, serological, parasitological, mycological, immunological, biochemical and other microbiological work; makes diagnostic examinations of fecal specimens, urine, blood, spinal fluid, serum, pus, lesion swabs, throat swabs, respiratory secretions, exudates, transudates, and other body fluids of human and/or animal origin for diseases such as tuberculosis, pneumonia, undulant fever, meningitis, diphtheria, gonorrhea, septicemia, typhoid fever, food poisoning, amoebic dysentery, bacillary dysentery, streptococcal and staphylococcal infections; identifies hookworms, tapeworms, and other types of microparasites; makes serologic examination of blood serum, and spinal fluid for evidence of syphilis; makes heterophile and febrile agglutination tests for infectious mononucleosis, undulant typhoid and paratyphoid fevers and tularemia; makes microbiological examinations for the sanitary control of potable water for domestic use; makes microbiological examinations for the sanitary control of beach and swimming pool water for recreational use; makes microbiological examinations of eating, drinking, and food servicing equipment for the sanitary control of public eating places; makes microbiological examinations of milk, dairy and food products; makes microbiological examinations of sewage and waste products; instructs others in performance of laboratory work; evaluates laboratory data; keeps records and makes reports.

Knowledges and Abilities Required:

Knowledge of: In addition to the knowledges required at the next lower level, work at this level requires a general knowledge of the principles and practices of microbiology pertinent to the assigned area or areas.

Ability to: In addition to the abilities required at the next lower level, work at this level requires the ability to apply, adapt, and use the methods, procedures and techniques pertinent to the area or areas assigned, perform tests requiring extreme accuracy and deriving at logical conclusions and to instruct others in area or areas assigned.

MICROBIOLOGIST IV

5.518

Duties Summary:

Conducts special investigations or research projects in one or more specialized fields of microbiology for a public health or departmental laboratory; and/or supervises and participates in the activity of one or more areas in the field of microbiology and performs other duties as required.

Distinguishing Characteristics:

Microbiologist IV positions are typically of two general types. The two types are:

1. A position responsible for planning and conducting special investigations and/or research projects of a fairly intensive and comprehensive nature in one or more of the specialized fields of microbiology including the technical responsibility for the investigations and/or research projects assigned. The scope and intensity of the investigations or projects typically require supervising one or more lower level microbiologists and may include one or more laboratory assistants. Work at this level requires the skillful application, adaptation and modification of methods, procedures, and techniques in solving a wide range of problems or in meeting the needs of many situations pertinent to the investigations or projects assigned.
2. A position responsible for the services required of a large laboratory unit encompassing one or more areas in the field of microbiology, under the general supervision of a higher-level microbiologist in charge of a laboratory. At this level the scope of operation typically requires supervising one or more lower-level microbiologists and may also include one or more laboratory assistants. Typical assignments in the assigned area or areas of microbiology include the performance of the more difficult and complex tests, examinations, and analyses, the testing and evaluation of commercial materials for acceptability in certain laboratory tests, examinations and analyses, and the modifications of laboratory methods, procedures and techniques. Assignments also include maintaining a continual awareness of current, more effective and efficient techniques; and adopting or modifying techniques to suit laboratory needs. Positions at this level may also be required to assist in the general operation of the laboratory.

Typical Duties:

1. Plans, organizes, and performs investigational and/or research activities in one or more specialized fields of microbiology such as virology, veterinary medicine, sanitary microbiology and medical microbiology; discusses with key

3/28/67

persons pertinent problems related to the investigational and/or research projects such as the nature, objective, finances and personnel involved, etc.; draws up and finalizes workable draft including time factor, cost factor, space requirement, literature review, equipment and supplies needed, methods and procedures to be applied, the purpose, expected findings, significance of findings to microbiology and public health, etc.; assembles needed equipment, supplies and materials needed for the investigations and/or projects; instructs and directs the activities of personnel assigned to the investigations and/or research projects; develops, adapts, and modifies methods, procedures and techniques as necessary; compiles and analyzes data; submits findings for publication; attends and presents findings in scientific meetings.

2. Plans and organizes the services of a large laboratory unit of one or more areas of microbiology, such as tuberculosis, water, food, serology, hematology, bacteriology, parasitology and mycology and supervises and performs the tests, examinations and analyses required; assigns and reviews the work of other microbiologists or laboratory helpers; reads technical journals and recommends changes in methods, procedures and techniques; assists in the preparation of legal papers for the prosecution of adulterators of food; participates in the supervision of student trainees in laboratory work; performs job performance ratings of subordinates and may recommend disciplinary actions as necessary; maintains and requisitions equipment and supplies; assists other laboratories in areas pertaining to specific area or areas assigned, prepares and submits reports.

Knowledges and Abilities Required:

Knowledge of: In addition to the knowledges required at the next lower level, work at this level requires a comprehensive knowledge of the principles and practices of microbiology pertinent to the specialized area or areas and a knowledge of the principles and practices of supervision.

Ability to: In addition to the abilities required at the next lower level, work at this level requires the ability to recognize a substantial range of microbiological problems and the scientific implications of the problems, the ability to select ways in which microbiological methods, procedures, and techniques can be modified in an assigned area or areas; plan, organize and carry out the work activities assigned; analyze, evaluate, draw sound conclusions and prepare and submit results for publication; and establish and maintain effective working relationship with others.

MICROBIOLOGIST V

5.522

Duties Summary:

Directs and supervises the activities in one or more specialized fields in microbiology for a central public health or departmental laboratory; or manages and operates a public health laboratory servicing a county-wide jurisdiction; and performs other duties as required.

Distinguishing Characteristics:

Microbiologist V positions are typically of two general types:

1. The position is responsible for directing the activities in one or more

specialized fields such as virology, veterinary medicine, sanitary microbiology and medical microbiology in a central public health or departmental laboratory. A position in this class includes the maintenance of effective relationships with staff, physicians and others regarding services requested and rendered, supervising a staff of one or more microbiologists who may be in charge of an assigned unit or units, and carrying out various activities for effective management of the laboratory; such as, seeing that adequate supply levels are maintained, recommending equipment purchases and setting priorities of assignments.

2. The position is responsible for the management and operation of a public health laboratory servicing a county-wide jurisdiction such as in Maui, Hawaii and Kauai, under the administrative direction of the District Health Officer or other personnel in the respective counties. Technical guidance and direction is received from the Microbiologist VII or his assistant as necessary, both of whom are physically located on the island of Oahu. The broad scope of operation typically requires the services of a Microbiologist V due to the overall knowledges and skills required for effectively providing the services of a public health laboratory in a county-wide jurisdiction. In addition to performing the various tests and analyses in the laboratory, position in this class carries out the various activities for effective management of the laboratory such as budget estimating, maintaining adequate supplies, and recommending equipment purchases. Position at this level may also include supervising lower level microbiologists, laboratory assistants or other related personnel.

Typical Duties:

Plans, coordinates, directs and supervises the activities in a specialized field such as virology, veterinary medicine, sanitary microbiology and medical microbiology in a public health or departmental laboratory; assigns and reviews work of staff; participates in interviews and selection of new employees; prepares efficiency reports for employees of the laboratory; prepares or supervises the preparation of daily reports to physicians, institutions and other agencies; prepares monthly and annual reports of the activities of the laboratory; conducts surveys and investigational studies; conducts in-service training and orientation programs for students, trainees, new employees and other personnel from the Peace Corps, East-West Center, University, hospitals, and other institutions or agencies; tests and evaluates the performance of other laboratories to qualify for premarital, prenatal, milk and other certificates; reads technical journals and attends special training programs to keep abreast of developments in the field; works to improve laboratory methods, procedures and techniques; attends and participates in scientific meetings.

Knowledges and Abilities Required:

Knowledge of: In addition to the knowledges required at the next lower level, work at this level requires a knowledge of the trends in microbiology pertinent to the assigned field of microbiology.

Ability to: In addition to the abilities required at the next lower level, work at this level requires the ability to plan, organize, direct, and evaluate the work of others; organize and conduct in-service training programs and prepare operational reports.

MICROBIOLOGIST VI

5.526

Duties Summary:

Assists in planning, organizing, directing and coordinating the State's central public health laboratory; conducts surveys, investigations, and research; and performs other duties as required.

Distinguishing Characteristics:

This class involves responsibility for providing assistance in planning, organizing, coordinating, and carrying out the activities of the central public health laboratory program. A position in this class includes conducting difficult and complex laboratory surveys, investigations, and research; planning, directing and coordinating laboratory investigations and research projects involving two or more of the laboratory sections; providing consultative services in one or more specialized fields; providing technical supervision to the various laboratory sections; and acting for the Microbiologist VII in his absence.

Typical Duties:

Assists in planning, organizing, directing, and coordinating the activities of the central public health laboratory; makes recommendations for improving and developing laboratory policies and activities in conferences with the Microbiologist VII; makes recommendations in the planning of joint investigations or research projects involving federal, state, county, city or other agencies in conferences with the Microbiologist VII and coordinates, assigns, and participates in these activities; compiles the budget requests for the Oahu central public health laboratory and makes recommendations for approval; reviews and evaluates all activities of the Oahu central public health laboratory and recommends changes in conferences with the Microbiologist VII; makes recommendations for introducing and improving laboratory methods, procedures, and techniques; compiles monthly and annual statistics of the Oahu central public health laboratory activities; assigns and participates in training activities for microbiologists, students from University of Hawaii, hospitals, East-West Center, etc., pertaining to public health laboratory work; participates in orientation programs for new State health employees; informs physicians, hospitals, other agencies and the general public about the Oahu central public health laboratory program; gives talks on public health laboratory work to professional organizations and others as requested; provides technical consultation and advice to the district public health laboratories as necessary; makes annual on-site inspections and evaluations of facilities and laboratory services provided by private laboratories for Medicare requirements; conducts scientific investigations and projects and publishes significant findings in medical and scientific journals; directs and coordinates research and investigation projects requiring two or more laboratories and provides technical assistance as necessary; recommends disciplinary actions of employees; keeps abreast of current developments in public health laboratory work; serves on various public committees in the health field; represents the Microbiologist VII in contacts with the public and the staff.

Knowledges and Abilities Required:

Knowledge of: In addition to the knowledges required at the next lower level, work at this level requires a comprehensive knowledge of the principles and

practices of public health, laboratory science and other related fields which include epidemiology, health statistics, environmental health, communicable and chronic disease, sanitary science and sanitary practices.

Ability to: In addition to the abilities required at the next lower level, work at this level requires the ability to plan, direct, coordinate, manage and supervise the broad activities of a public health laboratory program; plan, organize, and conduct complex research studies; write technical articles for publication in medical and scientific journals; speak effectively before others; act as consultant in one or more specialized fields; and apply, adapt, and develop methods, procedures and techniques to cope with new and unusual problems.

MICROBIOLOGIST VII

5.531

Duties Summary:

Plans, organizes, directs, and coordinates the State's central public health laboratory program; and performs other duties as required.

Distinguishing Characteristics:

This class involves responsibility for the administration of the State's central public health laboratory program. This includes the planning and implementation of public health laboratory policies, practices and procedures in the central public health laboratory, providing technical supervision to the district public health laboratories on the outside islands, providing consultative, and technical assistance to all laboratories in the State; organizing and directing research and investigational activities, and carrying out the personnel and budgetary functions necessary for program development and implementation.

Typical Duties:

Plans, organizes, directs, and coordinates the activities of the State's central public health laboratory; formulates policies, methods and procedures; plans, directs, and reviews research and investigational activities; provides technical supervision for the laboratory services performed on the outside islands; performs consultative and inspectional services for federal, state, county, non-governmental agencies and individuals; prepares and justifies budget requests; participates in the interviewing and selection of laboratory personnel; prepares periodic, monthly and annual reports of laboratory activities, investigations, and surveys; prepares technical articles for publication; gives talks and lectures in public health to professional and lay groups; attends meetings and conferences; keeps abreast of current developments in public health laboratory work; participates in the activities of professional organizations.

Knowledges and Abilities Required:

Knowledge of: In addition to the knowledges required at the next lower level, work at this level requires a comprehensive knowledge of the principles and practices of public health methodology; and principles and practices of public health administration.

3/28/67

Ability to: In addition to the abilities required at the next lower level, work at this level requires the ability to effectively plan, organize, and direct the activities of the State's central public health laboratory program.

3/28/67

PART II

DEPARTMENT OF PERSONNEL SERVICES
STATE OF HAWAII5.510
5.514
5.518
5.522
5.526
5.531Minimum Qualification Specifications
for the Classes:MICROBIOLOGIST II, III, IV, V, VI, VIIEducation Requirement:

Applicants for all levels must have graduated from an accredited college or university with a major in microbiology, bacteriology, biology or chemistry with at least 30 semester hours in biological science and 20 semester hours in the physical and mathematical sciences. This course work must have included at least 20 semester hours in microbiology in such subjects as: (a) bacteriology, immunology, serology, algology, mycology, parasitology, protozoology, rickettsiology, tissue culture, and virology; (b) food, dairy, soil, industrial, public health, agriculture and applied bacteriology or microbiology; (c) genetics, physiology, metabolism, taxonomy, epidemiology, animal or plant physiology or pathology and similar courses, provided these courses were oriented toward the study of micro-organisms. Applicants must also possess course work in qualitative and organic chemistry or biochemistry, physics and college algebra.

Experience Requirement:

Applicants must have progressively responsible work experience of the types and quantities described in the table below:

<u>Class</u>	<u>Specialized Experience</u>	<u>Supervisory Experience</u>	<u>Administrative Aptitude</u>	<u>Total</u>
Microbiologist II	0	0	0	0
Microbiologist III	1	0	0	1
Microbiologist IV	2	*	0	2
Microbiologist V	3	*	0	3
Microbiologist VI	3	1	**	4
Microbiologist VII	3	2	**	5

Specialized Experience:

Professional experience in the detection, isolation, identification, cultivation, use and/or control of microorganism. Such experience may have been gained in such scientific disciplines as bacteriology, immunology, serology, mycology, parasitology, protozoology, virology or similar areas of science.

For levels III, IV, and V, at least one year of experience must have been comparable to the next lower level in this series. For level VI and VII one year of experience must have been comparable to the next lower level in this series or 2 years of experience at two levels below the level at which the applicant seeks appointment.

Supervisory Experience:

Supervisory experience in the field of microbiology which included (1) planning and directing the work of others; (2) assigning and reviewing their work; (3) advising them on difficult problem areas; (4) timing and scheduling their work; and (5) training and developing new employees.

*In supervisory positions at levels IV and V, supervisory aptitude rather than supervisory experience may be accepted. Supervisory aptitude is the demonstration of aptitude or potential for the performance of supervisory duties through successful completion of regular or special assignments which involve some supervisory responsibilities or aspects; by serving as a project leader, or in similar work in which opportunities for demonstrating supervisory capabilities exists; by completion of training courses in supervision accompanied by application of supervisory skills in work assignments; or by favorable appraisals by a supervisor indicating the possession of supervisory potential.

Administrative Aptitude:

**For levels VI and VII, applicants must show evidence of administrative aptitude. Administrative aptitude may be demonstrated in experience which shows strong affirmative evidence of the necessary administrative abilities. Such evidence may be in the form of success in regular or special assignments or projects which involved administrative problems, e.g., in planning, organizing, promoting, and directing programs providing staff advice and assistance; interest in management demonstrated by awareness of managerial problems and the ability to solve them; completion of educational or training courses in the areas of management accompanied by the application of the principles which were learned to work assignments; managements's observation and favorable evaluation of the applicant's leadership and managerial capabilities, success in trial assignments to managerial and/or administrative tasks.

Quality of Experience:

Possession of the required amount of experience will not in itself be accepted as proof of qualification for a position. The applicant's overall experience must have been of such scope and responsibility as to conclusively demonstrate that he possesses current and pertinent knowledges and skills necessary to perform the duties of the position for which he is being considered. The evaluation of the applicant's performance and potentiality will be based upon information acquired through confidential inquiry of his supervisor and others familiar with the nature and quality of his work.

Substitution of Education for Experience:

- A. Possession of a Master's degree in microbiology, bacteriology or a closely related science that is directly oriented toward the study of microorganism from an accredited college may be substituted for one year of the required specialized experience.
- B. Possession of a doctor of philosophy degree in the majors specified in A above may be substituted for 2 years of the required specialized experience.

License Required:

As appropriate, applicants must possess a current Laboratory Technician's license issued by the State of Hawaii Department of Health.

Applicants serving in a Laboratory Director's capacity must possess a current Laboratory Director's license issued by the State of Hawaii Department of Health.

Tests:

For competitive actions, all applicants must qualify on an appropriate examination for the class. For noncompetitive actions, the examination may be waived.

Selective Certification:

For certain positions, because of the highly specialized nature of the duties and responsibilities, certification and selection may be restricted to eligibles who possess the pertinent experience and training necessary to perform the work. Departments requesting selective certification must show the connection, in writing, between the kind of training or experience on which they wish to base selective certification and the duties of the position to be filled.

Physical Requirement Standard:

Standard 3 bg: Applicants must be physically able to perform efficiently the duties of the position, which are described elsewhere in the specification. Good distant vision in one eye and ability to read without strain printed material the size of typewritten characters are required, glasses permitted. Ability to hear the conversational voice, with or without a hearing aid, is required. In most instances, an amputation of arm, hand, leg, or foot will not disqualify and applicant for appointment, although it may be necessary that this condition be compensated by use of satisfactory prosthesis. Ability to distinguish shades of colors is essential. Further, applicants must possess emotional and mental stability. Any physical condition which would cause the applicant to be a hazard to himself or to others will disqualify for appointment. A person with a handicap will be considered upon demonstration of ability to perform tasks or the ability or means to compensate for his handicap sufficiently to perform the duties of the class.

This is an amendment to the minimum qualification specification which was adopted on April 5, 1967.

APPROVED: October 4, 1971

(For) *James H. Takushi*
JAMES H. TAKUSHI

Director of Personnel Services

NOV 16 1971

Copies sent to:

District Health Office - Hawaii, Kauai, Maui
C/S Hospital Administrative Office
Hawaii State Hospital
Waimano Training School & Hospital
Personnel Office-alpha & occup. code files

Vector Control Br, E.H. Div.
Lab. Branch, MHS Div.

DEPARTMENT OF PERSONNEL SERVICES
STATE OF HAWAII

5.510
5.514
5.518
5.522
5.526
5.531

Minimum Qualification Specifications
for the Classes:

MICROBIOLOGIST II, III, IV, V, VI, VII

Education Requirement:

Applicants for all levels must have graduated from an accredited college or university with a major in microbiology, bacteriology, biology or chemistry with at least 20 semester hours in biological science and 20 semester hours in the physical and mathematical sciences. This course work must have included at least 20 semester hours in microbiology in such subjects as: (a) bacteriology, immunology, serology, algology, mycology, parasitology, protozoology, rickettsiology, tissue culture, and virology; (b) food, dairy, soil, industrial, public health, agriculture and applied bacteriology or microbiology; (c) genetics, physiology, metabolism, taxonomy, epidemiology, animal or plant physiology or pathology and similar courses, provided these courses were oriented toward the study of micro-organisms. Applicants must also possess course work in qualitative and organic chemistry or biochemistry, physics and college algebra.

Experience Requirement:

Applicants must have progressively responsible work experience of the types and quantities described in the table below:

<u>Class</u>	<u>Specialized Experience</u>	<u>Supervisory Experience</u>	<u>Administrative Aptitude</u>	<u>Total</u>
Microbiologist II	0	0	0	0
Microbiologist III	1	0	0	1
Microbiologist IV	2	*	0	2
Microbiologist V	3	*	0	3
Microbiologist VI	3	1	**	4
Microbiologist VII	3	2	**	5

Specialized Experience:

Professional experience in the detection, isolation, identification, cultivation, use and/or control of microorganism. Such experience may have been gained in such scientific disciplines as bacteriology, immunology, serology, mycology, parasitology, protozoology, virology or similar areas of science.

For levels III, IV, and V, at least one year of experience must have been comparable to the next lower level in this series. For level VI and VII one year of experience must have been comparable to the next lower level in this series or 2 years of experience at two levels below the level at which the applicant seeks appointment.

Supervisory Experience:

Supervisory experience in the field of microbiology which included (1) planning and directing the work of others; (2) assigning and reviewing their work; (3) advising them on difficult problem areas; (4) timing and scheduling their work; and (5) training and developing new employees.

*In supervisory positions at levels IV and V, supervisory aptitude rather than supervisory experience may be accepted. Supervisory aptitude is the demonstration of aptitude or potential for the performance of supervisory duties through successful completion of regular or special assignments which involve some supervisory responsibilities or aspects; by serving as a project leader, or in similar work in which opportunities for demonstrating supervisory capabilities exists; by completion of training courses in supervision accompanied by application of supervisory skills in work assignments; or by favorable appraisals by a supervisor indicating the possession of supervisory potential.

Administrative Aptitude:

**For levels VI and VII, applicants must show evidence of administrative aptitude. Administrative aptitude may be demonstrated in experience which shows strong affirmative evidence of the necessary administrative abilities. Such evidence may be in the form of success in regular or special assignments or projects which involved administrative problems, e.g., in planning, organizing, promoting, and directing programs providing staff advice and assistance; interest in management demonstrated by awareness of managerial problems and the ability to solve them; completion of educational or training courses in the areas of management accompanied by the application of the principles which were learned to work assignments; managements's observation and favorable evaluation of the applicant's leadership and managerial capabilities, success in trial assignments to managerial and/or administrative tasks.

Quality of Experience:

Possession of the required amount of experience will not in itself be accepted as proof of qualification for a position. The applicant's overall experience must have been of such scope and responsibility as to conclusively demonstrate that he possesses current and pertinent knowledges and skills necessary to perform the duties of the position for which he is being considered. The evaluation of the applicant's performance and potentiality will be based upon information acquired through confidential inquiry of his supervisor and others familiar with the nature and quality of his work.

Substitution of Education for Experience:

- A. Possession of a Master's degree in microbiology, bacteriology or a closely related science that is directly oriented toward the study of microorganism from an accredited college may be substituted for one year of the required specialized experience.
- B. Possession of a doctor of philosophy degree in the majors specified in A above may be substituted for 2 years of the required specialized experience.

License Required:

As appropriate, applicants must possess a current Laboratory Technician's license issued by the State of Hawaii Department of Health.

Applicants serving in a Laboratory Director's capacity must possess a current Laboratory Director's license issued by the State of Hawaii Department of Health.

Tests:

For competitive actions, all applicants must qualify on an appropriate examination for the class. For noncompetitive actions, the examination may be waived.

Lective Certification:

For certain positions, because of the highly specialized nature of the duties and responsibilities, certification and selection may be restricted to eligibles who possess the pertinent experience and training necessary to perform the work. Departments requesting selective certification must show the connection, in writing, between the kind of training or experience on which they wish to base selective certification and the duties of the position to be filled.

Physical Requirement Standard:

Standard 3 bg: Applicants must be physically able to perform efficiently the duties of the position, which are described elsewhere in the specification. Good distant vision in one eye and ability to read without strain printed material the size of typewritten characters are required, glasses permitted. Ability to hear the conversational voice, with or without a hearing aid, is required. In most instances, an amputation of arm, hand, leg, or foot will not disqualify and applicant for appointment, although it may be necessary that this condition be compensated by use of satisfactory prosthesis. Ability to distinguish shades of colors is essential. Further, applicants must possess emotional and mental stability. Any physical condition which would cause the applicant to be a hazard to himself or to others will disqualify for appointment. A person with a handicap will be considered upon demonstration of ability to perform tasks or the ability or means to compensate for his handicap sufficiently to perform the duties of the class.

This is an amendment to the minimum qualification specification which was adopted on April 5, 1967.

APPROVED: October 4, 1971

(For)


JAMES H. TAKUSHI

Director of Personnel Services

.....
Minimum Qualification Specification
for the classes:CHEMIST II
CHEMIST III
CHEMIST IV
CHEMIST VEducation Requirements:

Graduation from an accredited college or university with a major in chemistry or a closely related science which included at least 30 semester hours in chemistry courses consisting of lectures, recitations and practical laboratory work. This course of study in chemistry must have included organic, inorganic, analytical and physical chemistry courses.

Substitution of Experience for Education: Administrative, professional, or technical work experience involving the application of knowledge in the field of chemistry as specified in the Education Requirements may be substituted for the required Education on a year-for-year basis.

Experience Requirements:

Except for the substitutions provided for in this specification, applicants must have had progressively responsible work experience of the kind and quality described below, and in the amounts indicated in the following table:

Class Title	Specialized Experience (Years)	Supervisory Experience (Years)	Total Experience (Years)
Chemist II	0	0	0
Chemist III	1	0	1
Chemist IV	2*	0	2
Chemist V	3*	**	3

Specialized Experience: Professional work experience which required the ability to apply the scientific laws and principles of chemistry to predict results; or to interpret and evaluate the results of professional research or analyses by other chemists; or to assess the need for and validity of proposed changes and improvements in laboratory procedures and methods.